

Claims

1. Noncontact proximity detector, especially for detection of the approach of a ferromagnetic component (3), having at least one magnet arrangement which produces a magnetic flux (J) and a magnetic field-sensitive sensor located in the action area of the magnetic flux (J), characterized in that the magnetic field-sensitive sensor is a Hall sensor (15; 25; 35; 45) with at least one flat Hall measurement field (16; 26; 36, 37; 46) and the vector of the magnetic flux (J) within the magnet arrangement (11; 21, 22; 31; 41-44) runs parallel to the two-dimensional extension of the Hall measurement field.

2. Proximity detector as claimed in claim 1, wherein the Hall sensor (15; 25; 35; 45) and the magnet arrangement (11; 21, 22; 31; 41-44) are arranged to be able to move relative to one another at least in the direction which runs perpendicular to the direction of the vector (J) of the magnetic flux.

3. Proximity detector as claimed in claim 1 or 2, wherein the magnet arrangement comprises at least one magnet (11; 31).

4. Proximity detector as claimed in claim 1 or 2, wherein the magnet arrangement comprises at least two magnets (21; 22) which are located at a distance from one another, with magnetic fluxes (J) which run within the magnets being directed parallel and preferably opposite one another and wherein the Hall sensor (25) is located in a neutral area which is made in the intermediate space between the two magnets (21, 22).

5. Proximity detector as claimed in claim 1 or 2, wherein the magnet arrangement (40) comprises three or more magnets (41 - 44) which are arranged such that their magnetic fluxes (J) within the magnets run parallel to the two-dimensional extension of the Hall measurement field (46) of the Hall sensor (45).

6. Proximity detector as claimed in claim 4 or 5, wherein the magnets are arranged such that the vectors of the magnetic fluxes (J) of at least two magnets (21, 22; 41, 42 and 43, 44) which are opposite one another are pointed against one another.

7. Proximity detector as claimed in claim 4 or 5, wherein the vectors of the magnetic fluxes (J) of all magnets (21, 22; 41-44) point in the direction of the Hall sensor (25) or in the opposite direction (46).

8. Proximity detector as claimed in claim 4 or 5, wherein the magnets (11; 21, 22; 31; 41-44) are arranged to be able to move relative to one another.

9. Proximity detector as claimed in one of the preceding claims, wherein the magnet arrangement (10; 20; 30; 40) consists of one or more bar-shaped permanent magnets (11; 21, 22; 31; 41-44).

10. Proximity detector as claimed in one of the preceding claims, wherein the Hall sensor (35) is made as a differential Hall sensor and has at least two Hall measurement fields (36, 37) which are located next to one another or in succession relative to the direction of the vector of the magnetic flux (J).

11. Proximity detector as claimed in one of the preceding claims, wherein the characteristics of the Hall sensor such as for example application point, operating threshold, transconductance, etc., can be subsequently tuned, especially programmed.